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(54) **LOCAL COMMUNICATION SYSTEM AND STATION FOR USE IN SUCH A SYSTEM**
LOKALES NACHRICHTENSYSTEM UND STATION ZUR ANWENDUNG IN EINEM SOLCHEN SYSTEM
SYSTEME DE COMMUNICATION LOCAL ET STATION UTILISABLE DANS CE SYSTEME

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Description

[0001] The invention relates to a local communications system, and to a device for use in such a system. In particular, the present invention relates to a local communications system comprising a plurality of devices interconnected for the communication of messages via one or more data channels, each device including at least one functional element addressable via at least one of said one or more data channels as a subdevice, the subdevices in the system including a user output subdevice for displaying user-readable messages to a user of the system, a user-readable message being determined by status information of a device, composed into a user-readable message by the subdevice element of that device, and transmitted directly or indirectly to the user output subdevice for display.

[0002] Examples of local communication system of the type set forth in the opening paragraph are described in our European patent applications EP-A-0505006 and EP-A-0535749.

[0003] A problem with existing systems is the requirement for an originating subdevice to monitor the display of messages sent. A system which partially addresses the problem is described in EP-A-0 369 382 (Sony). This document describes a home-bus system in which various household appliances are joined by one or more (linked) bus systems. The user's television receiver acts as both a display for status information and an input for user commands, by selection from a display menu and/or the use of a suitably configured remote control device. To avoid the need for subdevice monitoring of display messages, all user readable messages are generated within the television receiver on the basis of status data sent by the remote devices. When a message is to be displayed on screen, the message generating CPU within the television receiver activates an on screen display function for a fixed period, such as three seconds, during which the message may be displayed.

[0004] According to the present invention a local communication system and a display device as defined in claims 1 and 6 respectively are provided.

[0005] The use of message lifetimes, which may be assigned by the originating subdevice and indicated in the first field of a message or commonly assigned to all messages regardless of origin by the user output subdevice, allows simplification of originating subdevices which would no longer be required to time their own messages and issue requests for removal of messages at the end of their lifetime.

[0006] The invention further provides a display device operable to display messages and handle the timing of message lifetimes in the manner of the user output subdevice in the system hereinbefore described. Further aspects and features of the invention will become apparent from reading the following description and claims.

[0007] Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a domestic audio/video system embodying the invention,

Figures 2 and 3 illustrate the positioning of message fields on a display;

Figure 4 illustrates an on-screen-display (OSD) control function used in the system of Figure 1; and

Figure 5 is a flowchart illustrating OSD message control and timing.

[0008] Figure 1 shows a domestic video entertainment system comprising a satellite broadcast tuner 10, a video cassette recorder (VCR) 12, a Smart card reader 13 and a television receiver 14, all connected to a serial data bus 16. Video and audio signals are passed within the devices and between the devices 10, 12 and 14 using, for example, SCART (Euroconnector) plugs, sockets and multiwire cables.

[0009] The serial data bus provides for distributed control of the bus, and allows commands and other messages to be uniquely addressed for specific "devices", such as the apparatuses 10, 12, 13 and 14, and also for specific "sub-devices" within each device.

[0010] Within each of the devices 10, 12 and 14 there are shown blocks representing subdevices. The division of a device into subdevices is necessary only in a logical sense, that is to say, from the point of view of its behaviour relative to the serial bus 16. In the physical implementation of the device, there may or may not be corresponding separate physical subdevices. In fact, in the embodiment shown, each device includes one audio/video controller (AVC) type of subdevice which provides the control and systematic interrogation intelligence for all subdevices within that device, relaying system messages to and from those subdevices as indicated by the dotted data paths in Figure 1. The AVC subdevices also provide the (distributed) controlling logic of the system as a whole, interpreting user commands and controlling the operation of the system accordingly. Often, the control logic of the AVC and some or all of the other subdevices will be integrated using a single programmed microcontroller. Other subdevices not shown in Figure 1 will generally be included in such a system, including timers, audio amplifiers, and so forth, and the subdevices described herein are presented as a representative sample only.

[0011] In the satellite tuner device 10, a tuner subdevice 26 (TUN) performs the signal processing functions necessary to provide baseband video signals to the connected devices. The AVC subdevice 20 receives user instructions from a user input/output (User I/O) subdevice 27 (UIO) (the front panel and/or remote control of the satellite tuner) and

system messages from the bus 16, and operates to select channels, keep track of preset channel selections and so forth.

[0012] The VCR device 12 includes its AVC subdevice 22, and also a User I/O subdevice 29 (UIO), a terrestrial broadcast tuner subdevice 28 (TUN), a switchbox subdevice 30 (SB) and a videotape record/replay deck 32.

[0013] The television receiver device 14 includes its AVC subdevice 24 and also a user input/output subdevice 41 (UIO), a terrestrial tuner subdevice 42 (TUN), a switchbox subdevice 44 (SB) and a video monitor subdevice 46 (VID) coupled with a display screen. The User I/O subdevice 41 of the television receiver includes an on-screen display (OSD) function 50, as described hereinafter, and a remote control 41a for the input and transmission to subdevice 41 of user control signals.

[0014] In operation, the tuner subdevices 26, 28 and 42 can be regarded as sources of video signals within the system. The video monitor subdevice 46 can act as a destination for video signals, and functions to display images to the user. The record/replay deck subdevice 32 can act as a source or a destination of video signals, depending on whether it is playing or recording at a given time.

[0015] Since the functional elements within the devices 10, 12, 14 are addressable as system subdevices, any of the AVC subdevices 20, 22, 24 can take control of the bus and address commands to those subdevices. This is done for example by an AVC subdevice which has been informed of a user command by a User I/O subdevice and requires control of subdevices at various points in the system to implement the user's wishes.

[0016] System message formats for controlling the basic functions of certain common subdevices are defined, while scope is left for defining not only new commands, but also request and reply messages that enable one system device or subdevice to interrogate another as to its properties and status. Each switchbox subdevice 30 and 44 can be controlled via the bus (or by its associated AVC subdevice) to connect its output signal path(s) to a specified one of its input signal paths. For example, if a user indicates to the television receiver device 14 that it is desired to watch a certain satellite broadcast channel, suitably addressed and coded system messages can be sent via the bus 16 to ensure that the satellite tuner 10, VCR 12, card reader 13 and the television 14 are active, to cause the satellite tuner 10 to select the appropriate channel, to cause the VCR switchbox subdevice 30 and the television switchbox subdevice 44 to connect the appropriate signal path from source to destination. There are many ways of arranging these events with or without user intervention. For greatest user-friendliness, the whole process can be controlled by the AVC subdevice of the device which receives the user input. The information necessary for building the signal path from source to destination can be obtained by a suitable series of system request messages to the relevant devices and subdevices.

[0017] In order to provide a user-friendly user interface for the system, any AVC subdevice (hereinafter "AVC") may wish to display user messages using the on-screen display (OSD) facility 50 of the User I/O subdevice 41. For example, when the television is activated by a user and a signal path set up according to the user's wishes, the AVC 24 may be arranged to confirm visually for the user which channel is being watched.

[0018] Figure 2 shows a screen space 60 having three display fields F1, F2, F3 available: these are positioned near the bottom of the display to minimise the obscuring of television pictures. As shown in Figure 3, a message M1 (in this case a status message from AVC 22 of the video recorder 12) may occupy more than one field F1, F2 as will be described hereinafter. As will also be described, if there are sufficient free fields, two or more messages may be displayed simultaneously, as shown by message M2 (from AVC 20 of satellite tuner 10) appearing in display field F3.

[0019] The control and operation of the OSD is determined by protocols for the dialogue language command, the OSD data and OSD status requests.

[0020] The dialogue language command may be used to select the language and character set to be used by a device receiving the command for generating OSD messages.

[0021] The response is in the format of the dialogue language command followed by a response code. The response code may take one of four values, namely "not implemented", "reject", "busy" or "completed". The response code 'not implemented' indicates that the device does not support this command or the specified operands. Response code 'reject' indicates that, whilst the device is generally able to execute the received command, it is unable to do so on this occasion due either to the same or another device command/request being received or the current state of the device preventing execution (for example the device is inactive or is in an emergency state). Response code 'busy' indicates that the device has received and is processing the command but the final response (either 'reject' or 'completed') is at present unknown: the final response will be sent on completion of processing. Response code "completed" indicates that the command was executed as specified, that is to say the language and character set specified by the dialogue language command has been selected.

[0022] The OSD data protocol defines the format of the display data transmitted. Data is transmitted in frames, the general format of which is as shown in Figure 4, with single frame messages or the first frame of a multiple frame sequence carrying additional information to further frames as described below. When data is transmitted in a multiple frame sequence, locking is used to maintain the path from originating to destination device. The first frame locks the destination and the final frame unlocks it: a maximum number of frames (4 is preferred) is specified for a locked sequence. When a message needs to be displayed in multiple lines on the television screen, each line is sent as a

separate frame sequence. When Japanese data is being transmitted, where each character requires 2 bytes of definition, care must be taken not to split any 2 byte character code between successive frames.

[0023] Preferably a timeout provision is made for locking whereby, if no message portion (frame) is received by the user output subdevice for a predetermined period when locked, the lock is removed and messages from other subdevices may again be accepted.

[0024] As shown in Fig. 4, all frames are made up of 13 bytes. The first byte (DTATR) indicates whether the OSD is European/American requiring 1 byte per character or Japanese (requiring 2 bytes), whilst the second (BYTE) indicates the number of DATA bytes following. The following DATA bytes (DATA1 to DATA11) specify the OSD data to be displayed, although in the first frame of a frame sequence only 8 character data bytes are available (DATA4 to DATA11), with the remaining bytes (DATA1 to DATA3) carrying control information relating respectively to the language and character set, the message mode, and the line sequence.

[0025] The byte for language and character set (DATA1) indicates the chosen character set and language, the code being as in the dialogue language command. The mode byte (DATA2) indicates the importance of the message as follows:

Normal: a normal message such as 'Play' sent from a VCR to indicate that a cassette is being played.
Important: an important message such as 'No Cassette' sent from a VCR when instructed to play or record and no cassette is present in the record/replay deck.
Alert: a warning message, such as 'Emergency'.

[0026] The line sequence byte (DATA3) provides one of two indications, depending on whether the frame is the first frame in the first line of a single or multiple line message, or whether the frame is the first frame in a subsequent line of a multiple line message. In the first line of a single or multiple line message, this byte indicates the total number of lines in the message, that is to say the number of frame sequences which will need to be received before the message is complete. In the first frame of a second or subsequent line of a multiple line message, the DATA3 byte may carry other data.

[0027] The OSD status request is sent from a device to a display subdevice to obtain information about the OSD function.

[0028] The response to the OSD status request includes an Answer byte indicating 'not implemented', 'reject' or 'completed'. An answer of 'not implemented' indicates that the display subdevice does not support the request or the option specified. An answer of 'reject' indicates that the display subdevice has the ability to execute the received request but is unable to do so on the present occasion due either to the same or another display subdevice command/request being received or the current state of the display device prevents execution (for example the display is inactive or is in an emergency state).

[0029] A 'completed' answer indicates that the display subdevice will display OSD data in the language and character set specified, and includes a level byte indicating the OSD level supported by the display device as shown in Table 1 below:

Table 1

Level	Display device
1st	Displays all modes (Normal, Important and Alert) in the same format.
2nd	Supports separate formats for Normal and Important modes. Alert messages displayed in the same format as Important.
3rd	Displays all modes in different formats.

[0030] In order to simplify the operation of devices generating messages for display, the user output subdevice (the OSD function 50; Figure 1) is given greater control of display than has heretofore been provided in, for example, the system of EP-A-0505006 referred to earlier.

[0031] All OSD messages may be given a fixed lifetime (suitably of at least four seconds) by the OSD function which also handles the removal of messages at the end of their lifetime. This removes the responsibility from each subdevice sending a message to be displayed for timing the display and subsequently sending a further message to the OSD function requesting removal of the message. As will be appreciated, this also reduces the number of messages on the interconnecting bus system. Should an originating subdevice wish to maintain a message on screen for longer than its specified lifetime, it is required to reissue the display instructions within the original lifetime.

[0032] Figure 5 is a flowchart illustrating a number of the factors taken into account by the OSD function in the handling of OSD messages and commencing with the receipt of a message for display 62. A check (VALID?) 64 is made to ascertain whether message can be displayed (for example whether the display is inactive or in an emergency

state) and, if not, a 'reject' message (SEND REJECT) 66 is sent as described previously.

[0033] If the message can be displayed, its length in terms of the number of fields required is determined and a check is made (FIELDS AVAILABLE?) 68 on the current display status to see whether there are sufficient presently unused display fields to accommodate the entire message. If an earlier received message is being displayed, such that there are insufficient free display fields to accommodate a later message, a comparison of the respective modes of the two messages (HIGHER MODE?) 70 is made to determine their relative "importance". If the earlier message has the same or a higher mode, the later message fails and the SEND REJECT stage 66 returns a 'reject' message to the originating subdevice of the later message. If however the later message has the higher mode, the earlier message is removed completely from display (REMOVE PRESENT DISPLAY) 72 thereby creating free display fields for the later message.

[0034] When there are free fields available (either originally or following removal of an earlier message) the mode of the message is determined as normal 74, important 76 or alert 78 and a message timer (not shown) is loaded with the appropriate message lifetime; T_{NORMAL} (step 80), $T_{\text{IMPORTANT}}$ (step 82), or T_{ALERT} (step 84).

[0035] Having set the timer, display of the message (BEGIN DISPLAY) 86 starts. A countdown loop 88, counts out the message lifetime and, on expiry, removes the message from display (step 90). Following removal, a "completed" message is sent (SEND COMPLETED) 92 to the originating subdevice as previously described.

[0036] As shown, a further check may be included at step 94 whereby messages with modes not satisfactorily identified as normal, important or alert are deemed invalid and a "not implemented" message is sent to the originating subdevice.

[0037] Setting of the display lifetime may be determined by the mode of the message as previously described thereby setting the display duration for that message. Alternatively, to reduce complexity in the OSD function, the OSD function may assign a fixed lifetime to all received messages regardless of their mode or originating device. In such a case, steps 74-84 of Figure 5 may be replaced by a single step of setting the timer to a countdown time standardised for all messages.

[0038] In order to reduce conflicts, which may occur when a first message is being displayed and a second message is received by the display subdevice, the display subdevice manages the OSD messages in accordance with the following conditions:

- the display subdevice treats each message as a single object, rather than as a set of separate lines to ensure that the display remains free from parts of previous messages and avoids the possibility of messages becoming mixed on screen;
- accepts a command to display a message and determines whether display is possible depending on the size of the message and availability of display fields. An acknowledge message may then be transmitted to the originating subdevice indicating whether the message has been displayed;
- a received OSD message will overwrite (that is to say completely replace) a previous message unless the display function determines that there are sufficient available display fields for the simultaneous display of both messages;
- only one message at a time may be displayed per originating device or subdevice.

[0039] The above conditions, as implemented by the display subdevice, have advantages for the originating devices in that they are not required to search for free lines on the display, nor are they required to consider options supported by individual lines of the display, and they can send messages directly to the display subdevice without the prior step of issuing requests. An advantage to the user is that no partially overwritten messages can appear on the display.

Claims

1. A local communication system comprising a plurality of devices (10, 12, 14) interconnected for the communication of messages via one or more data channels (16), each device including at least one functional element (20, 22, 24) addressable via at least one of said one or more data channels as a subdevice, the subdevices in the system including a user output subdevice (41) for displaying user-readable messages to a user of the system, a user-readable message being determined by status information of a device (10), composed into a user-readable message by the subdevice element (20) of that device, and transmitted directly or indirectly to the user output subdevice (41) for display, characterised in that a subdevice (22) originating a user-readable message is operable to determine a respective display lifetime for that message and to include an indication of the lifetime in a message, the user output subdevice (41) is operable to detect the indication and, independently of the originating subdevice of a message and of the lifetime of any concurrently displayed messages, to time the or each message lifetime and remove the or each message from display on expiration of its respective lifetime, and wherein an originating subdevice (22) includes timing means and is operable to resend a message to the user output subdevice (41) within the lifetime of that message to extend the duration of its display.

2. A system as claimed in Claim 1, wherein a user-readable message transmitted to the user output subdevice (41) for display includes an identifier for the originating subdevice (20) and, following receipt, the user output subdevice (41) transmits a reply message directly or indirectly to the originating subdevice (20) indicating whether or not the user-readable message has been displayed.
3. A system as claimed in Claim 1, wherein a subdevice (20) originating a user-readable message indicates the lifetime for that message by specification of a display mode for that message, and the user output subdevice (41) assigns the respective lifetime to a received message on the basis of its display mode.
4. A system as claimed in Claim 1, wherein the user output subdevice (41) is further operable to determine and apply a lifetime to received user-readable messages not containing an indication of originator-set lifetime.
5. A system as claimed in Claim 1, wherein the user output subdevice (41) is switchable to apply a uniform lifetime to each received user-readable message regardless of the lifetime specified by its originating device.
6. A display device (14) for use in the local communication system of Claim 1, characterised in that, where each user-readable message received by the display device (14) includes specification of a respective display lifetime, the user output subdevice (41) of the display device includes means operable to detect said specification and timing means which, independently of the originating subdevice of a message, count out the specified message lifetime, with the user output subdevice being configured to remove the message from display on expiration of the counted-out message lifetime unless the message is again received during the lifetime, and with a respective new lifetime, in which case the message display continues until the new lifetime has been counted out.

Patentansprüche

1. Lokales Nachrichtensystem mit einer Vielzahl von miteinander verbundenen Einrichtungen (10, 12, 14) zur Übermittlung von Nachrichten über einen oder mehrere Datenkanäle (16), wobei jede Einrichtung zumindest ein Funktionselement (20, 22, 24) enthält, das über zumindest einen der genannten einen oder mehreren Datenkanäle als Untereinrichtung adressierbar ist, wobei die Untereinrichtungen in dem System eine Benutzerausgabeuntereinrichtung (41) enthalten, um einem Benutzer des Systems durch den Benutzer lesbare Nachrichten anzuzeigen, wobei eine vom Benutzer lesbare Nachricht durch Statusinformation einer Einrichtung (10) bestimmt wird und von dem Untereinrichtungelement (20) jener Einrichtung zu einer vom Benutzer lesbaren Nachricht zusammengestellt wird und für die Anzeige direkt oder indirekt zu der Benutzerausgabeuntereinrichtung (41) weitergeleitet wird, dadurch gekennzeichnet, dass eine Untereinrichtung (22), die eine vom Benutzer lesbare Nachricht hervorbringt, imstande ist, eine jeweilige Anzeigelebensdauer für diese Nachricht zu bestimmen und in einer Nachricht eine Angabe der Lebensdauer aufzunehmen, wobei die Benutzerausgabeuntereinrichtung (41) imstande ist, die Angabe zu detektieren und unabhängig von der Ursprungsuntereinrichtung einer Nachricht und der Lebensdauer eventueller gleichzeitig angezeigter Nachrichten die oder jede Nachrichtenlebensdauer zeitlich zu steuern und die oder jede Nachricht bei Ablauf ihrer jeweiligen Lebensdauer vom Display zu entfernen und wobei eine Ursprungsuntereinrichtung (22) Zeitsteuerungsmittel enthält und imstande ist, eine Nachricht innerhalb der Lebensdauer dieser Nachricht zur Benutzerausgabeuntereinrichtung (41) zurückzusenden, um die Dauer ihrer Anzeige zu verlängern.
2. System nach Anspruch 1, wobei eine für die Anzeige zur Benutzerausgabeuntereinrichtung (41) weitergeleitete, vom Benutzer lesbare Nachricht eine Kennung für die Ursprungsuntereinrichtung (20) enthält und auf den Empfang folgend die Benutzerausgabeuntereinrichtung (41) eine Antwortnachricht direkt oder indirekt zu Ursprungsuntereinrichtung (20) weiterleitet, wobei sie angibt, ob die vom Benutzer lesbare Nachricht angezeigt worden ist oder nicht.
3. System nach Anspruch 1, wobei eine Untereinrichtung (20), die eine vom Benutzer lesbare Nachricht hervorbringt, die Lebensdauer dieser Nachricht durch Spezifikation eines Anzeigemodus für diese Nachricht anzeigt und die Benutzerausgabeuntereinrichtung (41) einer empfangenen Nachricht auf Basis ihres Anzeigemodus die jeweilige Lebensdauer zuweist.
4. System nach Anspruch 1, wobei die Benutzerausgabeuntereinrichtung (41) weiterhin imstande ist, für empfangene vom Benutzer lesbare Nachrichten, die keine Angabe einer vom Ursprung eingestellten Lebensdauer enthalten,

eine Lebensdauer zu bestimmen und anzuwenden.

- 5 5. System nach Anspruch 1, wobei die Benutzerausgabeuntereinrichtung (41) schaltbar ist, um auf jede empfangene vom Benutzer lesbare Nachricht ungeachtet der von ihrer Ursprungseinrichtung spezifizierten Lebensdauer eine gleichmäßige Lebensdauer anzuwenden.
- 10 6. Anzeigeeinrichtung (14) zur Verwendung in dem lokalen Nachrichtensystem von Anspruch 1, dadurch gekennzeichnet, dass, wenn jede von der Anzeigeeinrichtung (14) empfangene vom Benutzer lesbare Nachricht eine Spezifikation einer jeweiligen Anzeigelebensdauer enthält, die Benutzerausgabeuntereinrichtung (41) der Anzeigeeinrichtung Mittel enthält, die imstande sind, die genannten Spezifikations- und Zeitsteuermittel zu detektieren, die unabhängig von der Ursprungsuntereinrichtung einer Nachricht die spezifizierte Nachrichtenlebensdauer abzählen, wobei die Benutzerausgabeuntereinrichtung ausgebildet ist, um die Nachricht nach Ablauf der abgezählten Nachrichtenlebensdauer vom Display zu entfernen, wenn nicht die Nachricht während ihrer Lebensdauer erneut und mit einer jeweiligen neuen Lebensdauer empfangen wird, in welchem Fall die Nachrichtenanzeige fortgesetzt wird, bis die neue Lebensdauer abgezählt worden ist.

Revendications

- 20 1. Système de communications local comprenant une pluralité de dispositifs (10, 12, 14) interconnectés pour la communication de messages par l'intermédiaire d'une ou de plusieurs voies de transmission de données (16), chaque dispositif comprenant au moins un élément fonctionnel (20, 22, 24) adressable par l'intermédiaire d'au moins une desdites une ou plusieurs voies de transmission de données sous la forme d'un sous-dispositif, les sous-dispositifs dans le système comprenant un sous-dispositif de sortie d'utilisateur (41) pour afficher des messages lisibles par l'utilisateur à un utilisateur du système, un message lisible par l'utilisateur étant déterminé par des informations d'état d'un dispositif (10), composé en un message lisible par l'utilisateur par l'élément de sous-dispositif (20) de ce dispositif, et transmis directement ou indirectement au sous-dispositif de sortie d'utilisateur (41) en vue de son affichage, caractérisé en ce qu'un sous-dispositif (22) émettant un message lisible par l'utilisateur peut fonctionner pour déterminer une durée de vie d'affichage respective pour ce message et pour inclure une indication de la durée de vie dans un message, le sous-dispositif de sortie d'utilisateur (41) peut fonctionner pour détecter l'indication et, indépendamment du sous-dispositif émetteur d'un message et de la durée de vie de n'importe quel message affiché simultanément, pour temporiser la durée de vie du message ou de chaque message et supprimer le message ou chaque message de l'affichage au terme de sa durée de vie respective, et dans lequel un sous-dispositif émetteur (22) comprend des moyens de temporisation et peut fonctionner pour renvoyer un message au sous-dispositif de sortie d'utilisateur (41) dans les limites de la durée de vie de ce message pour prolonger la durée de son affichage.
- 25 2. Système suivant la revendication 1, dans lequel un message lisible par l'utilisateur, transmis au sous-dispositif de sortie d'utilisateur (41) en vue de son affichage, comprend un identificateur pour le sous-dispositif émetteur (20) et, après réception, le sous-dispositif de sortie d'utilisateur (41) transmet un message de réponse directement ou indirectement au sous-dispositif émetteur (20) indiquant si oui ou non le message lisible par l'utilisateur a été affiché.
- 30 3. Système suivant la revendication 1, dans lequel un sous-dispositif (20) émettant un message lisible par l'utilisateur indique la durée de vie pour ce message par spécification d'un mode d'affichage pour ce message, et le sous-dispositif de sortie d'utilisateur (41) attribue la durée de vie respective à un message reçu sur la base de son mode d'affichage.
- 35 4. Système suivant la revendication 1, dans lequel le sous-dispositif de sortie d'utilisateur (41) peut en outre fonctionner pour déterminer et appliquer une durée de vie à des messages lisibles par l'utilisateur reçus ne contenant pas d'indication de la durée de vie fixée par l'émetteur.
- 40 5. Système suivant la revendication 1, dans lequel le sous-dispositif de sortie d'utilisateur (41) peut être commuté pour appliquer une durée de vie uniforme à chaque message lisible par l'utilisateur reçu quelle que soit la durée de vie spécifiée par son dispositif émetteur.
- 45 6. Dispositif d'affichage (14) à utiliser dans le système de communications local suivant la revendication 1, caractérisé en ce que, lorsque chaque message lisible par l'utilisateur reçu par le dispositif d'affichage (14)

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comprend une spécification d'une durée de vie d'affichage respective, le sous-dispositif de sortie d'utilisateur (41) du dispositif d'affichage comprend des moyens pouvant fonctionner pour détecter ladite spécification et des moyens de temporisation qui, indépendamment du sous-dispositif émetteur d'un message, décomptent la durée de vie de message spécifiée, le sous-dispositif de sortie d'utilisateur étant configuré pour supprimer le message de l'affichage au terme de la durée de vie de message décomptée à moins que le message ne soit une nouvelle fois reçu au cours de la durée de vie, et avec une nouvelle durée de vie respective, auquel cas l'affichage du message se poursuit jusqu'à ce que la nouvelle durée de vie ait été décomptée.

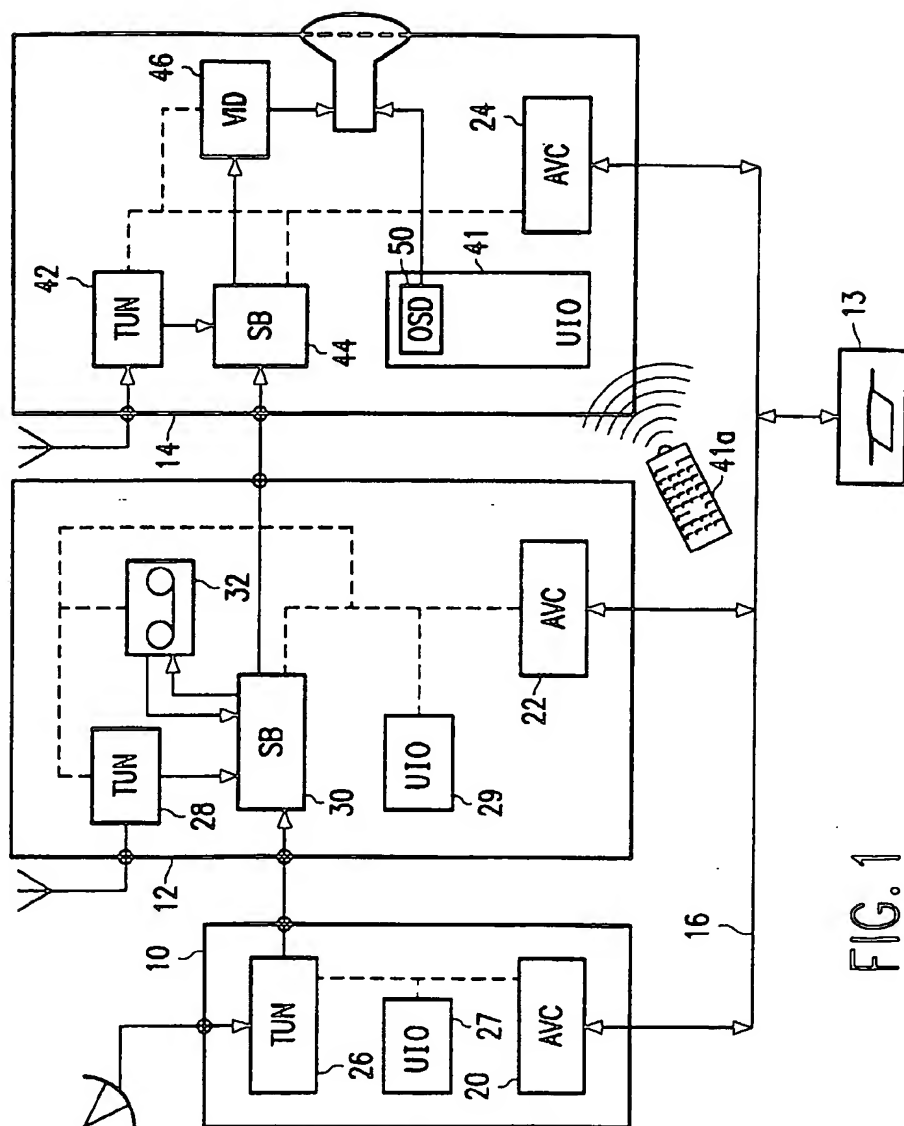


FIG. 1

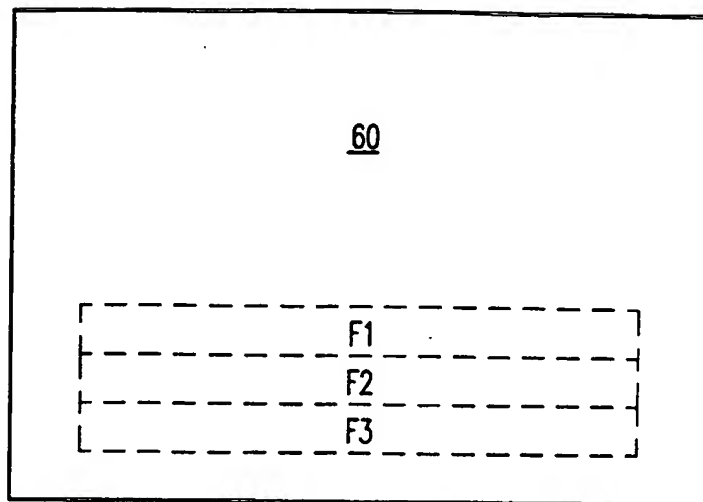


FIG. 2

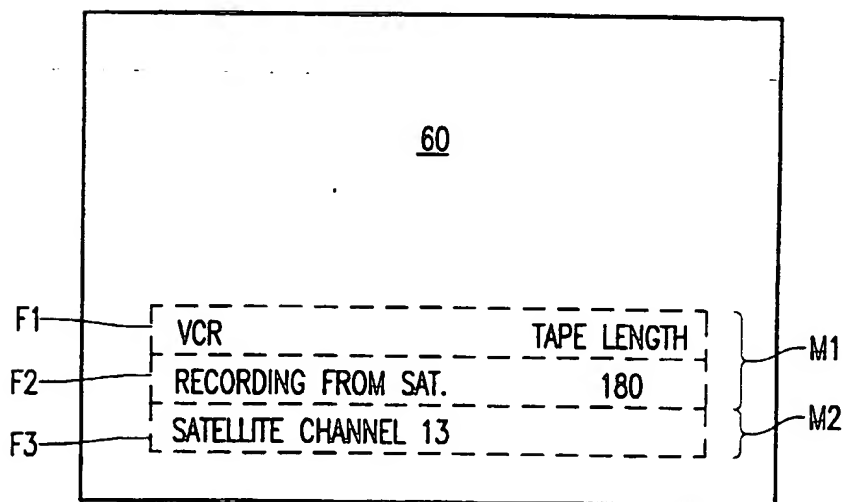


FIG. 3



FIG. 4

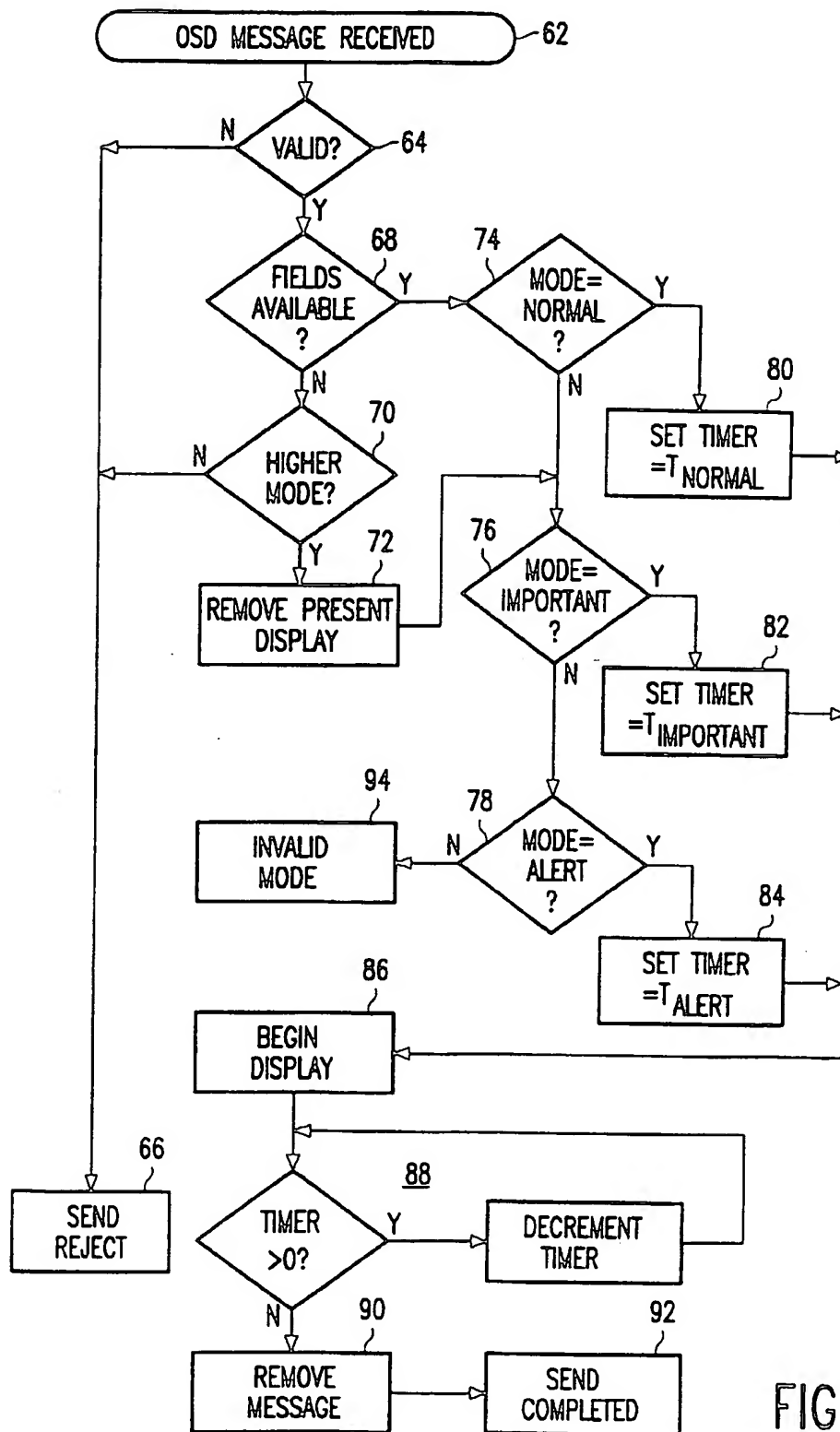


FIG. 5